

REMARKS

Claims 1 - 20 were pending in the present application for patent as of the Office Action of March 9, 2004. In the Office Action of March 9, 2004, the Examiner maintained all of the claim rejections of the previous Office Action of September 15, 2003, and made the Office Action final. The claims have not been amended.

The examiner rejected claims 1, 2, 3, 9, 10, 11, 13, 18, and 19 under 35 USC 102(b) as being anticipated by Fincher. The examiner also stated that "There is nothing in applicant's claim language that precludes the examiner from reading Fincher as meeting the claimed limitation. The applicants respectfully disagree and believe that claims 1 - 3, 9 - 11, 13, 18, and 19 are allowable over Fincher for at least the reasons given in the previous response. In addition, the applicants provide the following comments.

Fincher does not show or suggest "An apparatus for detecting a stall condition of a stepping motor" as claimed in original claim 1. In Fincher, a stepping detector 32 is used to detect if the motor has stepped or whether it is stalled. Details of the stepping detector 32 are shown in FIG. 4A and described at least at column 8, line 58 to column 9, line 40. The stepping detector 32 of Fincher does not include an integrator or comparator as claimed in original claim 1.

The examiner stated that "The coils produce a signal that is output through a signal line (31). The signal is further output as a power command signal via signal line (44) to a PWM module (30). The PWM module comprises an integrator (163) that integrates the signal". The applicants respectfully assert that the integrator 163 of Fincher does not integrate the signal from the coils. More specifically, nowhere does Fincher show or suggest "an integrator having an input coupled to receive said signals and for generating an integrated version thereof", where the signals result from motion of the rotor as claimed in claim 1. Fincher shows an integrator 163 in FIG. 4E. The integrator 163 is part of a PWM 30. However, the integrator 163 in Fincher does not receive "signals resulting from motion of said rotor" as claimed in claim 1. In FIG. 4E of Fincher the input of integrator 163 is connected to an output of the clock signal generator 162. The clock signal generator 162 is a separate component having what appears to be a part number CD4046BM. As disclosed at column 11, lines 4 - 21 and

shown in FIG. 4E, the clock signal generator 162 provides a square wave to the input to the integrator 163. The integrator 163 generates a triangular waveform from the square wave signal. The integrator 163 has no other input than the one connected to the clock signal generator 162. The clock signal generator 162 does not have an input for receiving a signal from the motor coils 14a - 14d, or for receiving a signal that is derived from the motor coils 14a - 14d. Because clock signal generator 162 is a clock signal generator, as described by Fincher, it will generate the same clock signal independent of what is happening with the motor coils 14a - 14d. Therefore, the integrator 163 is not receiving "said signals" as claimed in claim 1, and does not meet the claim limitations of claim 1.

In addition, Fincher does not show or suggest "a comparator coupled to said integrator for comparing said integrated version with a predetermined threshold to detect the stall condition" as claimed in claim 1. In Fincher, the voltage comparator 164 has one input for receiving the triangular waveform from the integrator 163 (which is not an integrated version of the signal from the motor coils) and another input for receiving a ramp signal from the line 44. The output of the comparator 164 is provided on line 28 and is the output of the pulse width modulator 30 "in accordance with well known operation of conventional pulse width modulators" (column 11, lines 19 - 21). The output of the comparator 164 is used to adjust the width of the motor drive pulse. Therefore, the integrator and comparator of Fincher do not receive the same signals or function in the same way as the integrator and comparator of claim 1. For these reasons, the applicants believe that the original claim 1 is allowable over Fincher.

The applicants believe that the comments above regarding the rejection of claim 1 also applies to the rejection of claims 2, 3, 9, 10, 11, 13, 18, and 19, and that claims 2, 3, 9, 10, 11, 13, 18, and 19 are allowable over Fincher.

Claims 14, 15, and 17 were rejected under 35 USC 103(a) as being unpatentable over Fincher in view of Gutierrez, and claims 4, 5, 6, 7, 8, 12, 16, and 20 were rejected under 35 USC 103(a) as being unpatentable over Fincher in view of Ito et al. The applicants believe that the comments above regarding the rejection of claim 1 also applies to the section 103 based rejection of claims 4, 5, 6, 7, 8, 12, 14, 15, 16, 17 and 20, and that claims 4, 5, 6, 7, 8, 12, 14, 15, 16, 17 and 20 are allowable over Fincher in view of Gutierrez and Ito et al.

The examiner pointed out that in the previous response the applicants incorrectly characterized claim 1 as requiring the integrator to receive signals from the current generator.

The applicants' attorney made this statement in error and regrets any confusion or inconvenience this misstatement may have caused the examiner.

No amendment made was related to the statutory requirements of patentability unless expressly stated herein. No amendment made was for the purpose of narrowing the scope of any claim, unless Applicant has argued herein that such amendment was made to distinguish over a particular reference or combination of references.


Believing to have responded to each and every rejection contained in the Office Action mailed March 9, 2004, Applicants respectfully request the reconsideration and allowance of claims 1 - 20; thereby placing the application in condition for allowance.

Respectfully submitted,

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